(19)

(11) Publication number: 2000106187A

Generated Document.

PATENT ABSTRACTS OF JAPAN

(21) Application number: **10279080**

(22) Application date: **30.09.98**

(51) Intl. Cl.: **H01M 4/62** H01M 4/02 H01M 4/58 H01M 10/40

(30) Priority:

(43) Date of application publication: **11.04.00**

(84) Designated contracting states:

(71) Applicant: **TOSHIBA BATTERY CO LTD**

(72) Inventor: **NARUMI KEISUKE**

(74) Representative:

(54) NONAQUEOUS ELECTROLYTIC SECONDARY BATTERY

(57) Abstract:

PROBLEM TO BE SOLVED: To provide high charging and discharging efficiency, an superior cycle characteristic, and compatibility with a nickel - cadmium battery, by constituting a positive electrode of an active material of Li4/3Ti5/3O4, a conducting material of vapor-phase carbon fiber, and a binder.

SOLUTION: A positive electrode 2 is obtained by pressure-forming a mixture including an active material of Li4/3Ti5/3O4, a conducting material made of a vapor-phase carbon fiber, and a binder. The vapor-phase carbon fiber 5-10 vol.%, having a diameter of 0.1-0.5 μm and the length of 10-100 μm, is included into the active material, in order to prevent lowering of charging efficiency and maintain a cycle characteristic. The potential of the active material Li4/3 Ti5/3O4 is 1.5 V with the Li+/Li potential as the reference, and the potential of a carbon material which is a negative electrode material is about 0 V on with the Li+/Li potential as the reference, consequently the secondary battery having an operating potential of 1.5 V is obtained. The battery presents a high discharge maintenance ratio in spite of repeated charges and discharges, and the crystal structure will not change even under the overcharged condition. Further, the vapor-phase carbon fiber has high resistance against expansion and contraction, low water absorption, and superior conductivity.